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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,000	12/19/2001	Nobuo Takeshita	2257-0202P-SP	8807
2292	7590	07/07/2005	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			CHU, KIM KWOK	
			ART UNIT	PAPER NUMBER
			2653	

DATE MAILED: 07/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/021,000	TAKESHITA, NOBUO	
	Examiner Kim-Kwok CHU	Art Unit 2653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 26 January 2005.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 1-4 and 6-11 is/are allowed.
- 6) Claim(s) 5 and 12-19 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 26 January 2005 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Claim Objections***

1. Claim 17 is objected to because of the following informalities:

(a) in claim 17, line 4, the term "detected," should be changed to --detected light,--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

*A person shall be entitled to a patent unless --  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.*

3. Claims 5, 12-16 and 18 are rejected under 35 U.S.C. § 102(b) as being anticipated by Mochizuki et al. (WO 97/42631).

Mochizuki teaches an optical head device having all the elements and means as recited in claim 5. For example, Mochizuki teaches the following:

(a) as in claim 5, an objective lens 7a for bringing light emitted from a light source 1 into focus on an information recording medium 101 (Fig. 2);

(b) as in claim 5, a lens holder 8 for holding the objective lens 7a (Fig. 1);

(c) as in claim 5, the lens holder 8 having a bearing hole 37 formed along a direction parallel to an optical axis of the objective lens 7a (Figs. 1 and 6; column 16, 7-13);

(d) as in claim 5, a support shaft 15 inserted in the bearing hole (Figs. 1 and 6; column 13, lines 7-13);

(e) as in claim 5, a light detector 5 for receiving the light reflected from the information recording medium 101 and outputting information about inclination of the objective lens relative to the information recording medium 101 on the basis of the light received (Figs. 2, 4 and 22);

(f) as in claim 5, an inclination drive unit 13 for, according to the information about the inclination, turning the lens holder 8 on a first axis perpendicular to the support shaft 37 (Figs. 7 and 29; coil 13 turns the lens holder 8 in the direction T which is perpendicular to the vertical axis; lens 9 is controlled by a biaxial actuator 19);

(g) as in claim 5, the inclination drive unit includes an electromagnetic drive means 13 (Fig. 7);

(h) as in claim 5, the electromagnetic drive means comprising a first element 13 mounted on the lens holder 8 on a second axis perpendicular to both the support shaft 37 and the first axis the support shaft (Figs 6 and 7; coils 13 are positioned in another axis which is not in the same plane as the support shaft and the first axis);

(i) as in claim 5, a second element located opposite to the first element 13 (Figs. 6 and 7); and

(j) as in claim 5, a magnetic material 11 fixedly mounted on the lens holder 8 in close vicinity to the second element 13 of the electromagnetic drive means (Fig. 6; lens holder 8 includes the base plate 16 is the biaxial actuator 19).

4. Claims 12-16 and 18, have limitations similar to those treated in the above rejection, and are met by the reference as discussed above. Claims 13-16 and 18 however also recite the following limitations which are also taught in the prior art of Mochizuki:

- (a) as in claim 13, a focusing drive unit including a coil 12 wound around the support shaft 15 (Fig. 10);
- (b) as in claim 13, the focusing drive unit being configured to move the lens holder in a focusing direction based on information from the light detector (Fig. 10; column 17, lines 35-41);
- (c) as in claim 14, a tracking drive unit, at least part of the tracking drive unit 13 being arranged on the first axis (Fig. 7; column 17, lines 41-49);
- (d) as in claim 15, the inclination drive unit includes a pair of coils 13 arranged on the second axis on either side of the support axis (Fig. 7);
- (e) as in claim 16, a tracking drive unit including a pair of coils 13 arranged on the first axis on either side of the support axis 15 (Fig. 7; coils 13 is arranged perpendicular to the shaft);
- (f) as in claim 16, a focusing drive unit including a focusing coil 12 wounded around the support shaft 15; and a controller 32 having electrical connections to the

inclination, tracking, and focusing drive units, respectively, wherein the controller 32 is operable to apply a current to each electrical connection based on the detected light (Figs. 7-10);

(g) as in claim 18, a base 16 operably connected to the support shaft 15; (Fig. 7); and

(h) as in claim 18, the inclination drive unit includes a pair of coils 13 mounted on the lens holder 8, such that the coils 13 are arranged on the second axis on either side of the support axis 15; and a pair of magnets 11 mounted on the base 16, such that the magnets are arranged on the second axis on either side of the support axis 15 (Fig. 7).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

*(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.*  
*Patentability shall not be negatived by the manner in which the invention was made.*

6. Claim 17 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Mochizuki (U.S. Patent 6,172,958) in view of Oinoue et al. (U.S. Patent 6,044,048).

Mochizuki teaches an optical head very similar to that of the instant invention. For example, Mochizuki teaches the following:

(a) as in claim 17, the light detector 5 generating a signal based on the detected light, the controller 53 being configured to apply the currents to the electrical connections based on the signals from the light receiving surfaces (Fig. 22).

However, Mochizuki does not teach the following:

(a) as in claim 17, the light detector includes a 2 by 2 matrix of light receiving surfaces.

Oinoue teaches an optical pickup having a photodetector array 27a with 2 by 2 detector elements (Figs. 5 and 15; column 9, lines 19-27).

Servo control, such as focusing and tracking of an objective actuator, requires certain arithmetic operations to be performed on the received light. In the case of Mochizuki's optical head, it would have been obvious to one of ordinary skill in the art to use a photodetector array with 2 by 2 detective elements such as Oinoue's, because the light detected by the 2 by 2 detective elements can be summed together to obtain a focusing error signal. In addition, the phases of the four detected light signals can be compared to obtain a tracking error signal.

7. Claim 19 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Mochizuki (U.S. Patent 6,172,958) in view of Nii et al. (U.S. Patent 6,574,186).

Mochizuki teaches an optical head very similar to that of the instant invention. However, Mochizuki does not teach the following:

(a) as in claim 19, a magnetic fluid within the bearing hole 37.

Nii teach a bearing hole filled with magnetic fluid 5 (Figs. 3 and 4; column 4, lines 26-40).

Air bubbles cause vibrating and shaking motions on Mochizuki's supporting shaft during the focusing and tracking servo movements. To remove the air bubbles, it would have been obvious to one of ordinary skill in the art to fill the space of Mochizuki's bearing hole and shaft with lubricant oil such as Nii's magnetic fluid, because the magnetic fluid displaces air bubbles under magnetic fields provided by the magnetic drive circuit.

***Allowable Subject Matter***

8. Claims 1-4 and 6-11 are allowable over prior art
  
9. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

As in claims 1 and 9, the prior art of record fails to teach or fairly suggests that the bearing hole having a diameter that increases while approaching the bearing hole's openings from the bearing hole's center.

The features indicated above, in combination with the other elements of the claims, are not anticipated by, nor made obvious over, the prior art of record.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shirotori (5,920,437) is pertinent because Shirotori teaches an optical head having an objective lens rotating on a supporting axis.

Kobayahsi et al. (5,488,594) is pertinent because Kobayashi teaches an optical head having an objective lens rotating on a supporting axis.

Yamamuro (5,148,420) is pertinent because Yamamuro teaches a photodetector having a 2 by 2 matrix of photodetecting elements.

Ichikawa et al. (4,838,649) is pertinent because Ichikawa teaches an optical head having an objective lens rotating on a pitching axis.

Yano et al. (4,473,274) is pertinent because Yano teaches an optical head having an objective lens rotating on a supporting axis.

11. Any response to this action should be mailed to:

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Or faxed to:

(571) 273-8300 (for formal communications intended for entry. Or:

(571) 273-7585, (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Any inquiry of a general nature or relating to the status of this application should be directed USPTO Contact Center (703) 308-4357; Electronic Business Center (703) 305-3028.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kim CHU whose telephone number is (571) 272-7585 between 9:30 am to 6:00 pm, Monday to Friday.

Kim-Kwok CHU

*kc* 6/27/05

Examiner AU2653  
June 27, 2005

(571) 272-7585

*TAN DINH*  
**PRIMARY EXAMINER**

*7/5/05*